

U.S. Patent Application Serial No. 10/814,679
Second Preliminary Amendment filed August 27, 2004
Inventors: Roy L. Hood and Gary L. Noedel
Our Reference No. 713629.417
Filing Date: March 31, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended): A three-dimensional, unitary, molded, polymeric article comprising a generally planar ~~two-dimensional~~ base section with a first side and a second side ~~formed from one polymer material~~ and at least one projecting element with a base section and a terminal part, with the at least one projecting element extending from the first side of the base section for the planar base section ~~extending from one side of said base section, wherein at least some terminal parts of said projecting elements are formed from a second polymer material,~~ wherein the base section of the at least one projecting element includes a core and a wall, wherein the core of the base section of the at least one projecting element and the terminal part of the at least one projecting element are formed therethrough of a first polymer material and the wall of the at least one projecting element is formed of a second polymer material.

2. (Currently Amended): The article according to ~~claim 1 wherein said~~ claim 1, wherein ~~the first polymer~~ one polymer ~~ie~~ material contains a first colored pigment and ~~said second the~~ second polymer ~~polymer~~ ~~ie~~ material contains a second colored pigment.

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3. (Currently Amended): The article according to ~~claim 2 wherein said base section~~
claim 1, wherein the base section contains a pigment that is different from ~~said terminal parts of~~
~~at least some of the projecting elements.~~ the terminal part of the at least one projecting element.

4. (Currently Amended): The article according to ~~claim 2 wherein said base section~~
claim 2, wherein the at least one projecting element includes a plurality of projecting elements
each having a terminal part, wherein the base section and a portion of the plurality of terminal
parts for the plurality of projecting elements ~~said terminal parts of at least some of said~~
~~projecting elements~~ contain the same pigment and ~~a portion of said terminal parts of at least~~
~~some of said projecting elements contain a different pigment than said base section.~~ a portion of
the plurality of terminal parts for the plurality of projecting elements contain a different pigment
than the base section.

5. (Currently Amended): The article according to ~~claim 1 wherein said polymers~~ claim 1,
wherein the first polymer material and the second polymer material are polymers selected from
the group consisting of polyolefins, polyethylene, polypropylene, vinyl polymers, polystyrene,
styrene-acrylonitrile copolymers, styrene-butadiene copolymers, acrylonitrile-butadiene-styrene
graft copolymers, polyvinyl butyral, polyamides, nylon-6, nylon-6,6, thermoplastic, urethane
polymers, thermoplastic elastomers, blends and alloys thereof.

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6. (Cancelled):

7. (Currently Amended): The article according to ~~claim 1 further comprising claim 1,~~
further comprising at least one from the group consisting of dyes, pigments of distinct colors and
other fillers.

8. (Currently Amended): The article according to claim 1, wherein at least one of the
first polymer material and the second polymer material ~~The article according to claim 1 wherein~~
~~at least one of said polymers~~ is polyethylene.

9. (Currently Amended): The article according to ~~claim 1 further comprising claim 1,~~
further comprising a slip-resistant sheet laminated to said base section. the base section.

10. (Currently Amended): The article according to ~~claim 1 wherein said base section~~
claim 1, wherein the base section includes open spaces to facilitate cleaning.

11. (Currently Amended): The article according to claim ~~7 wherein said terminal parts of~~
~~at least a minority of said projecting elements contain a different pigment than said base~~
~~section. 7, wherein the at least one projecting element includes a plurality of projecting elements~~

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and the base section contains a pigment that is different from at least a minority of the plurality of projecting elements.

12. (Currently Amended): The article according to ~~claim 7 wherein said~~ claim 7, wherein the base section contains a distinct pigment.

13. (Currently Amended): The article according to ~~claim 1 wherein at least one of said polymers~~ claim 1, wherein at least one of the first polymer material and the second polymer material comprises polyethylene with a density in the range of about 0.915 to about 0.92.

14. (Currently Amended): The article according to ~~claim 1 further comprising~~ claim 1, further comprising at least one dispersed functional filler selected from the group consisting of minerals, alumina, metal oxides, conductive fillers and conductive polymers.

15. (Currently Amended): The article according to ~~claim 1 wherein at least some terminal parts of said projecting elements are formed from at least one distinct polymer~~ claim 1, wherein the at least one projecting element includes a plurality of projecting elements each having a terminal part and at least some of the plurality of terminal parts are formed from at least one distinct polymer.

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16. (Withdrawn): In a polymer molding apparatus for producing on a rotating cylindrical mold a length of continuous, three-dimensional, molded, polymeric article comprising a plurality of projecting elements extending from a base section, wherein said apparatus comprises:

(a) a rotatable, cylindrical mold having

(i) a plurality of circumferential, rows of cavities, and

(ii) a plurality of parallel grooves separating said rows of cavities; and

(b) a stationary polymer injection block in arcuate proximity to said mold and having

(i) a plurality of cavity injection ports for supplying polymer to corresponding rows of cavities to form said projecting elements, and

(ii) a plurality of base-forming injection ports for supplying polymer to corresponding parallel grooves to form said base section;

the improvement wherein said stationary polymer injection block comprises two sets of circumferentially aligned, cavity injection ports for supplying at least two different polymers to at least a portion of said cavities.

17. (Withdrawn): An apparatus according to claim 16 wherein

(a) a first set of said two sets of circumferentially aligned, cavity injection ports supplies a first polymer to a cavity area rotating into proximity with said first set of ports to form a base section-proximate part of said projecting elements, and

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(b) a second set of said two sets circumferentially aligned, cavity injection ports supplies a second polymer to said cavity area rotating past said first port into proximity with said second set of ports to form a terminal part of said projecting elements.

18. (Withdrawn): An apparatus according to claim 16 wherein said first set of said two sets of circumferentially aligned, cavity injection ports and said surface injection ports communicate with a common supply of a first molten thermoplastic polymer.

19. (Withdrawn): An apparatus according to claim 16 wherein at least one of said two sets of circumferentially aligned, cavity injection ports and said surface injection ports further comprises a polymer flow control valve.

20. (Withdrawn): An apparatus according to claim 16 further comprising wiper elements affixed to said stationary polymer injection block and slidingly fitted into said grooves to contain a second polymer.

21. (Withdrawn): An apparatus according to claim 16 further comprising a back face in communication with said base section.

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22. (Withdrawn): An apparatus according to claim 21 wherein said back face is covered with at least one gasketed backing plate machined to supply a first polymer at one or more connections to a first polymer supply network and a second polymer having at least one connection to a second polymer channel.

23. (Withdrawn): An apparatus according to claim 22 wherein said first polymer supply network has one valve.

24. (Withdrawn): An apparatus according to claim 16 wherein said first polymer supply network is void of valves.

25. (Withdrawn): An apparatus according to claim 16 wherein said stationary polymer injection block comprises two sets of circumferentially aligned, cavity injection ports or supply three or more distinct polymers to at least a portion of said cavities.

26. (Withdrawn): A method for forming a multi-polymer, three-dimensional article comprising:

supplying a polymer from a first set of two sets of circumferentially aligned, cavity injection ports to a cavity area in a mold drum rotating in arcuate proximity with said first set of ports to form in said cavities base section-proximate parts of projecting elements; and

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supplying a different polymer from a second set of said two sets of circumferentially aligned, cavity injection ports to said cavity area rotating past said first set of ports into proximity with said second set of ports to form in said cavities terminal parts of said projecting elements.

27. (Withdrawn): The method according to claim 26 further comprising processing said polymers at a temperature of about 200 degrees Celsius while maintaining a coolant circulating through said mold drum at about 20 degrees Celsius.

28. (Withdrawn): The method according to claim 26 wherein said step of supplying said polymer to said cavity area in a mold drum comprises the step of supplying said polymer to said cavity area wherein said drum is rotating in the range of about 0.5 to about 5 rpm.

29. (Withdrawn): The method according to claim 26 further comprising the step of cutting said article into desired shapes.

30. (Withdrawn): The method according to claim 26 further comprising the step of adhering a rubberized fabric sheet to said article.

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31. (Withdrawn): The method according to claim 26 wherein said step of supplying a different polymer from a second set of said two sets of circumferentially aligned, cavity injection ports to said cavity area comprises supplying said polymer at a relatively high pressure to flow through a molten core of said polymer to said terminal parts of said cavity and advancing said first molten polymer toward said terminal end and said projecting elements.

32. (Withdrawn): The method according to claim 26 wherein said step of supplying a first polymer comprises supplying said first polymer at a low pressure so as to fill only parts of said cavity solidifying at said mold wall and having a generally molten core.

33. (Withdrawn): The method of claim 26 wherein said step of supplying a polymer comprises supplying said polymer to a cavity area in a mold drum wherein said mold drum is designed to produce extended lengths of grass-like sheet with blade-like elements extending from a ribbed base.

34. (New): A three-dimensional, unitary, molded, polymeric article comprising a generally planar base section with a first side and a second side and at least one first plurality of projecting elements and at least one second plurality of projecting elements, each having a base section and a terminal part, and extending from the first side of the base section for the planar base section, wherein the at least one first plurality of projecting elements, are formed of a first

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polymer material and the at least one second plurality of projecting elements are formed of a second polymer material.

35. (New): The article according to claim 34, wherein the first polymer material contains a first colored pigment and the second polymer material contains a second colored pigment.

36. (New): The article according to claim 34, wherein the base section contains a pigment that is different from the at least one first plurality of projecting elements.

37. (New): The article according to claim 34, wherein the base section contains a pigment that is different from the at least one second plurality of projecting elements.

38. (New): The article according to claim 34, wherein the first polymer material and the second polymer material are polymers selected from the group consisting of polyolefins, polyethylene, polypropylene, vinyl polymers, polystyrene, styrene-acrylonitrile copolymers, styrene-butadiene copolymers, acrylonitrile-butadiene-styrene graft copolymers, polyvinyl butyral, polyamides, nylon-6, nylon-6,6, thermoplastic, urethane polymers, thermoplastic elastomers, blends and alloys thereof.

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39. (New): The article according to claim 34, further comprising at least one from the group consisting of dyes, pigments of distinct colors and other fillers.

40. (New): The article according to claim 34, wherein at least one of the first polymer material and the second polymer material is polyethylene.

41. (New): The article according to 34, further comprising a slip-resistant sheet laminated to the base section.

42. (New): The article according to claim 34, wherein the base section includes open spaces to facilitate cleaning.

43. (New): The article according to claim 39, wherein the base section contains a pigment that is different from at least a minority of the plurality of projecting elements.

44. (New): The article according to claim 39, wherein the base section contains a distinct pigment.

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45. (New): The article according claim 34, wherein at least one of the first polymer material and the second polymer material comprises polyethylene with a density in the range of about 0.915 to about 0.92.

46. (New): The article according to claim 34, further comprising at least one dispersed functional filler selected from the group consisting of minerals, alumina, metal oxides, conductive fillers and conductive polymers.